



US Army Corps
of Engineers

DCAF Bulletin

Design Construction Analysis Feedback

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CEMP-C

Subject: Appropriate Use of Network Analysis (NAS)

Applicability: GUIDANCE

1. The purpose of this Bulletin is to provide information on the use of Network Analysis in Construction Contracts. Recent evaluations in the field have disclosed practices which are in need of improvement.

a. Finding: Contract specifications sometimes require numerous schedule sorts and several levels of sort precedence which are carried to the extreme.

Analysis: The minimum number of sorts and about two or three levels of sort precedence will usually suffice. Modern programs allow judicious selection of the range of activities displayed in a report and can be used to minimize the volume of each report. One report must however contain all activities. A total float sort should always be specified to show critical paths and a predecessor-successor report is necessary to understand logic. Construction personnel should edit the guide specification (CEGS 01310) during design.

b. Finding: Specifications in some districts contain elements which favor Arrow Diagramming over Precedence Diagramming.

Analysis: Precedence Diagramming is predominant in the industry and should not be excluded from Corps specifications. If Precedence Diagramming is utilized, it is important for Corps Personnel to understand its ramifications. In order to understand the logic of a Precedence Diagram, a predecessor-successor report is necessary. This report provides the same information in Precedence that was provided by an i-j sort or report in the Arrow Diagramming System. It is also important to recognize the effect of including start to start and finish to finish relationships. These relationships, if used, can be critical although they are not actual activities.

c. Finding: Often in the rush to approve schedules, Government personnel are not fully aware of the logic and quality of the schedule. Update information is often accepted at face value without detailed review for accuracy.

Analysis: It remains vital to understand the schedule logic and assure that there are proper relationships for the type of project. Also, as the work progresses, it is vital that the Government understand and concur with actual progress and any revised logic which is entered in the schedule. No report, however sophisticated, will be of value if the input logic or actual progress is faulty. It is more effective to concentrate on accurate input and then generate the desired

reports. This is the objective of the Standard Data Exchange Format (SDEF) which was developed to transfer data from one schedule program to another or into the Resident Management System (RMS). Another aid to understanding updates is RMS (Version 2.3) which will detect logic changes, duration revisions, and actual starts & finishes which do not agree with QC reports.

d. Finding: Government personnel are not always aware of the calculation parameters which the contractor is using when Primavera Project Planner is being used.

Analysis: If Primavera Project Planner is being used, it is also important for our personnel to be aware of the calculation parameters which have been set. Changing parameters can yield quite different results when activities with finish to start relationships are started without ending the previous activity (out of logic). We recommend that Retained Logic and contiguous execution be specified and used.

e. Finding: Recent review, commentary, and response to comments involving NAS schedules indicates misunderstanding concerning the option available to fix the late completion date of a schedule on the contract completion date. There is an erroneous impression in the field that using this management option imposes a "no earlier than" restriction on contract completion.

Analysis: Requiring the contractor to use the specified contract completion date as the late finish date on the last activity on the critical path is recommended. It does not usurp the contractor's right to schedule an earlier completion date. The contractor's projected completion can be earlier than the contract completion date and will be the early finish of the last activity on the critical path of the diagram. In this case, the most critical path will reflect positive float. This can be tracked by management as progress is posted to reveal if the contractor is maintaining his early completion date or is behind his schedule. It is important to recognize that if the contractor is maintaining progress to meet his early schedule and the Government causes a delay in his completion the contractor will be due extended overhead costs even though he will still finish within the contract period. If the contractor falls behind the specified contract completion date, fixing the late finish on the contract completion date will reflect how far behind he is and where progress must improve to complete on time. This will be manifested as negative float. Also this may reveal where Government actions or excusable delays under the Default Clause have affected the completion and should be compensated by extension of the contract completion date. The clearest depiction will be shown on a Total Float Sort.

2. This DCAF Bulletin has been coordinated with Operations, Construction and Readiness Division (CECW-O). Point of contact is Stanley Green CEMP-CE.



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